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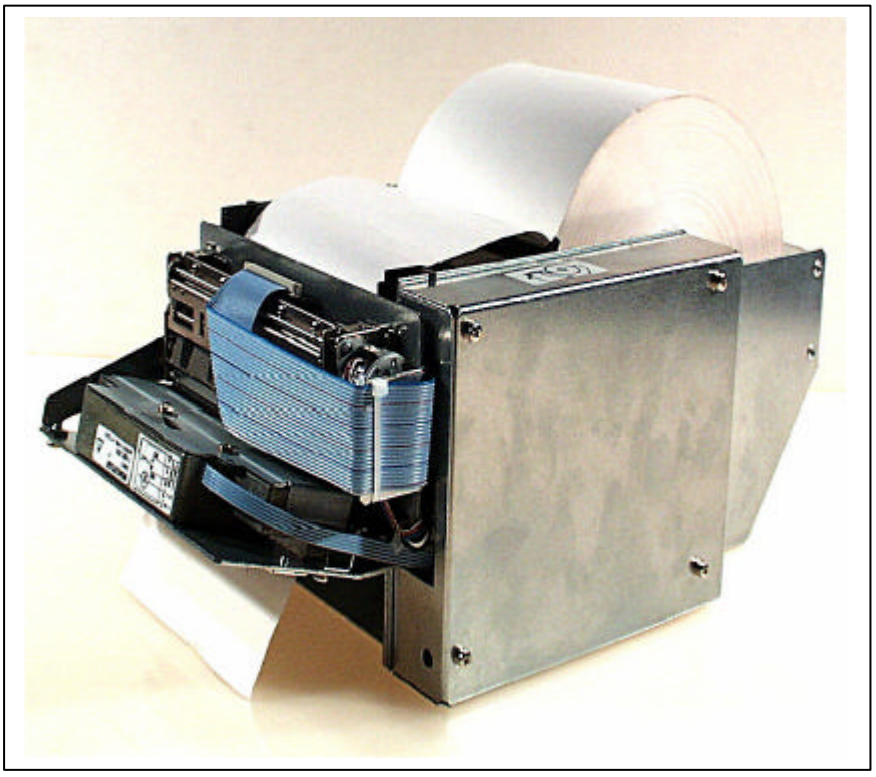

Service Manual

PIXXO A/B Coupon Printer

2 688 180

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HENGSTLER GmbH

PO Box 1151

D-78550 Aldingen

Germany

Telephone: +49 (0) 7424 890

Fax: +49 (0) 74 24 89210

e-mail: info@hengstler.de

Homepage: http://www.hengstler.de

Modification number: 080799

We reserve the right to make technical modifications to our products as part of our ongoing policy of Continuous Improvement

1 Modifications Listing

Modification number
080799

2 Document History

2.1 Previous Versions

02.05.96 First release
15.09.97
20.01.98
08.12.98

2.2 Modifications

Version 150997
Error corrections

Version 200198
Reworked for Word 6.0; Safety Advice

Version 081298
Standards/norms extended
A4 format

Version 080799
Error corrections

3 Bibliography

System Description 0 688 969

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5 Preface

The PIXXO Voucher Printer is modular constructed build-in printer with thermal print mechanism and integrated paper cutter. An extensive paper sensor system monitors the paper progress.
At a graphic print speed of 100 mm/sec, the maximum voucher length is 250 mm.
The paper dispenser is based on a paper roll of up to 230 meters length with a weight of 78 g/m².
Printer applications include voucher printing at Info Point terminals, lottery tickets, etc.

Please note:

The PIXXO Voucher Printer User Documentation covers:
- Software Manual
- Installation Manual
- as well as this Service Manual

This Service manual covers topics which are relevant to service personnel.

- PIXXO A Software Manual (SWH 2 688 181_565)
- PIXXO B Software Manual (SWH 2 688 181_586)
- Installation Manual (2 688 179)
- Data Protocol Manual (2 688 259)

This symbol identifies text which gives important advice relating to the correct and safe operation of the unit.

6 Safety Advice

- The PIXXO Voucher Printer is a quality product, manufactured according to recognised technology standards. It left the factory in a condition compliant with all safety regulation.

- In order to maintain this condition and to guarantee operation without danger to the User, the advice and warnings contained in this handbook must be followed.

- This unit has been built and tested according to EN 60950 relating to the safety of IT equipment. It has Protection Class III.

- The installation and assembly of electrical devices should only be undertaken by a qualified electrician.

- This unit should only be used once it has been built-in.

- When building equipment in, it must be guaranteed that the device requirements set for the fixture by the corresponding device safety norms are not in any way negatively influenced, leading to a reduction of the equipment safety levels.

- Before switching the unit on, it must be guaranteed that the operating and control voltages connected, do not exceed the values stated in the technical data specifications.

- Control and data lines must only be connected using SELV (separated extra low voltage system) circuits or circuits with power limitation which meet the requirements of EN 60950.

- The power plug connecting to the external power supply must be protected by external fusing. The corresponding socket must be installed, with easy access, close to the unit.

If you suspect that the device cannot be operated without danger, it must be switched off and put in a condition such that operation cannot accidentally be resumed. This may be the case if:

- damage to the unit is visible;
- the unit has been stored for a long time in unsuitable conditions:
- the unit has been subject to extreme transport demands.

If, as the result of equipment failure or error, there could be a danger of personal accident or damage to property, this must be avoided through additional safety measures, such as the installation of a position switch or a guard or barrier.

6.1 Electro-magnetic Compatibility

The unit is deigned for use in domestic, commercial or industrial applications.

7 Additional Information

Delivery
Please check that the delivery is complete by reference to the accompanying delivery documentation.

Unpacking
Having unpacked the equipment, please check that there has been no damage in shipping. Make sure that all parts, including and accompanying accessories have been removed from the packaging.

Claims
Any damage claims caused through transportation are only valid if the delivery company is advised without delay.
A damage report must be completed immediately and sent back to the manufacturer with the defective part(s).
When returning goods, the original packaging should be used if at all possible.
The following information should accompany all returns:

- Name and address of recipient.
- Device, type and serial numbers.
- A damage report with description of the defect.

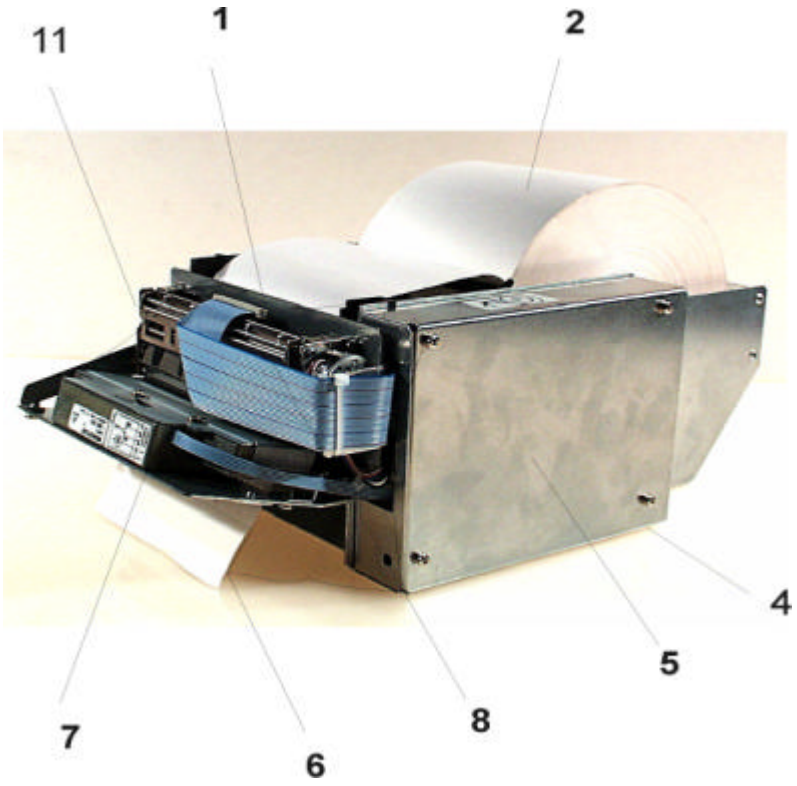
7.1 Glossary

BoF	Bottom of Form sensor
BPZ	Block Check Character
cpi	Characters per inch
cpl	Characters per line
CPOS	Cutter position for paper transport
CSC	Customer Service Centre
CST	Customer Service Terminal
Dot	Pin or thermal point printing
dpi	Dots per inch
DPOS	Print position for paper transport
EMC	Electro Magnetic Coupling
ESD	Electro Static Discharge
GDI	Graphic device interface
Host	Host computer
HTp	Hengstler thermal print mechanism
lpi	Lines per inch
lps	Lines per second
McbF	Mean cycle between Failure
Mk	Mark Recognition (1, 2, n)
MPOS	Mark position for paper transport
MTBF	Mean time between Failure
MtbSC	Mean time between Service Call
MttR	Mean time to Repair
PCS	Print Contrast Signal
PE	Paper End message
pps	Pulses per second
PrA	Presenter output sensor
PrE	Presenter input sensor
PVE	"Paper-out pending" message
PWE	Paper weekend message
Step	Smallest paper advance distance in inches
ToF	Top of Form sensor

8 Version Description

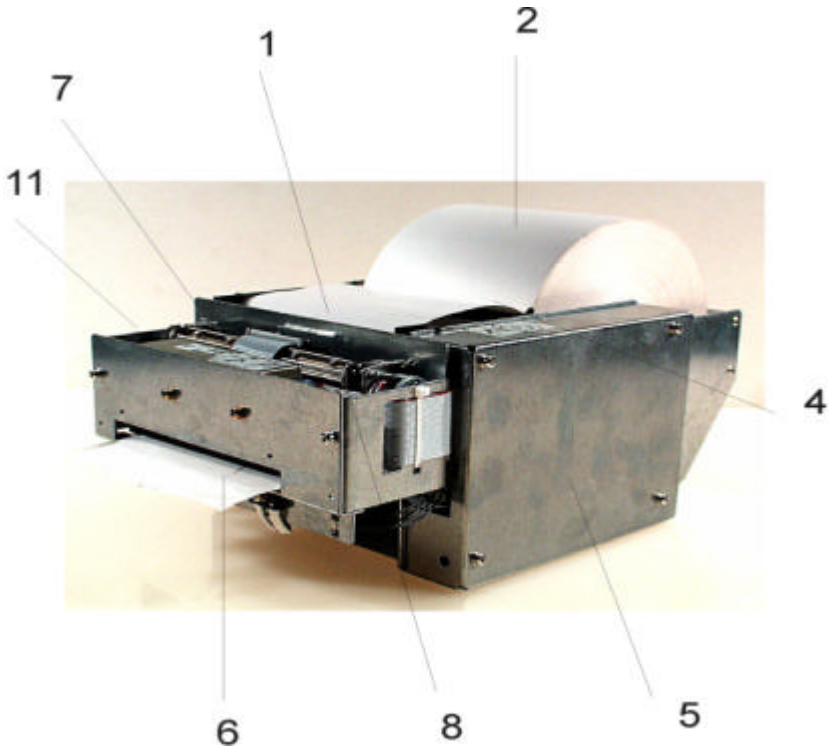
8.1 PIXXO Device Description

8.1.1 PIXXO A Construction



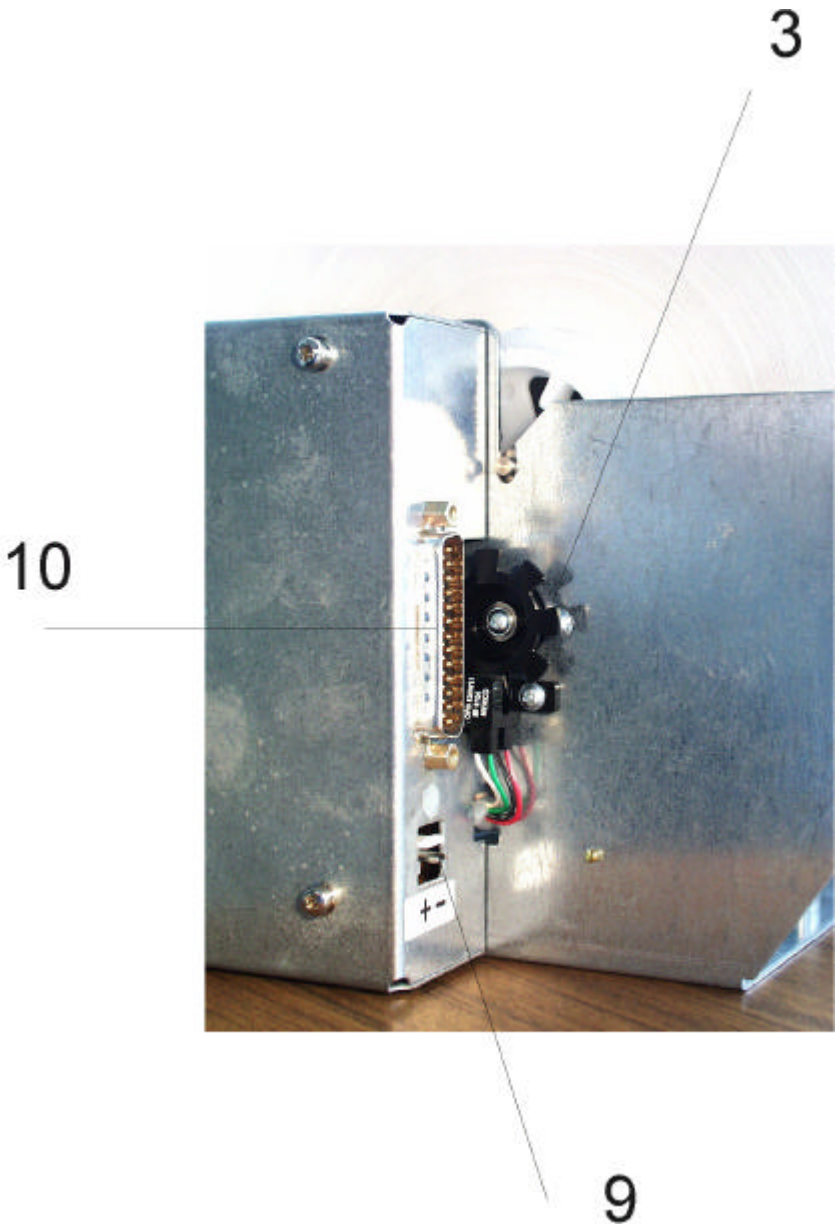
1 = Paper entry point
2 = Paper supply with paper holder
4 = Chassis build-in position - horizontal (option 15°)
5 = Electronics with data and power supply connections
6 = Paper exit point with anti-static brushes
7 = Cutter
8 = Thermal print mechanism
11 = Print head lifting arm

8.1.2 PIXXO B Construction



1 = Paper entry point
2 = Paper supply with paper holder
4 = Chassis build-in position - horizontal (option 15°)
5 = Electronics with data and power supply connections
6 = Paper exit point with anti-static brushes
7 = Cutter
8 = Thermal print mechanism
11 = Print head lifting arm

8.1.3 PIXXO A/B Construction



3 = Paper out pending monitoring
9 = Power supply connection
10 = Centronics data connection

9 Operation

The operation of the printer is carried out exclusively using the data interface.

10 Display

There is no display.

11 Installation & Mounting Description

11.1 Mechanical Fixings

The mechanical installation of the Pixxo unit must be carried out according to the printer fixing points.
The printer must always be installed horizontally with a maximum angled position of 15°.

11.2 Assembly

The two fixing bolts should be inserted into the 2 mounting holes located on the underside of the unit and secured using the captive knurled screws.

11.3 Electrical Connections

Please note

- The device must be disconnected from any power source during connection
- The power supply cable is attached to connector **(9)**
- The data cable is attached to connector **(10)**
- If it is not mounted on a conductive surface, the chassis must be earthed to the protective conductor

12 Maintenance

12.1 Cutter

Each time a new paper roller is installed, we recommend that the paper dust in the paper out feed slot, between the print mechanism and the cutter **(1)**, is cleaned with a small brush.

To do this, you have to remove the cover **(6)** first and then replace it when the cleaning is complete.

12.2 Print mechanism

Every three months or so, depending on how much printing has taken place, the print head **(3)** should be cleaned.

Procedures:

- Lift the print head using the lever **(11)**.
- Feed the paper out.
- Insert 160 g/m^2 paper through the paper entry point **(1)**
- Move the paper across the print head 4 or 5 times by hand and then remove it.
- Close the print head using the lever **(11)**.
- Feed the normal paper back in

12.3 Paper loader

No maintenance is necessary.

12.4 Sensors

If necessary, any dirt or dust should be cleaned away with a small bush.

13 Repair

Please note

During the warranty period, repairs should only be carried out by the manufacturer.

13.1 On Site

No repairs should be carried out on site with this printer.

In the case of problems, a service call should be requested.

If no corresponding cause of error is found, the complete printer should be exchanged.

13.2 At Service Centre

Some of the components of this printer can be exchanged by appropriately trained personnel. The list of exchangeable components is:

- **Complete print head carrier**
- **Controller printed circuit board**
- **Paper roll holder**

13.3 At Manufacturer

If the error(s) cannot be eradicated by the measures outlined in 13.1 and 13.2, the complete printer should be returned to the manufacturer.

14 Test programs

You can start test print actions by sending corresponding commands over the interface, as described in the Software manuals 2 688 181_565 and 2 688 181_586.

The following test patterns are printed.

- **Chessboard pattern**, or
- **Pixel pattern**

15 Errors & Disturbances

Error description	Cause	Counter measures
No print possible	End of paper reached or no paper available	Insert new paper roll
	Power switched off	Check power connections and/or switch power on.
	Print head is open	Close print head with lever **(5)**.
	Data interface incorrect	Check data interface; data cable, plug-in connections, etc.
Paper isn't cut off	Cutter defective	Call service technician

Please note

If the problem continues, please contact your Service Technician.

16 Technical Data

16.1 Controller Service Life

MTBF calculations

The accepted MTBF for the Controller is **69.4 months**.

16.2 Print Mechanism Service Life

MTBF calculation

Paper length	100 km (12.5% print ratio)

Voucher length	100 mm
Number of vouchers per year	77,000
Print ratio	12.5%

Print head MTBF is 5.6 years.
Equivalent to 16,200 hours at 8 hours per day.

16.3 Cutter Service Life

MTBF calculation

1,000,000 cuts up to 80g/m² paper weight

Cutter MTBF is 12.8 years.
Equivalent to 37,376 hours at 8 hours per day.

16.4 Environment

Ambient temperature
Operational: 0°C...+ 50°C continuous
Storage: -40°C...+ 70°C

Humidity
Operational: 35%...80%
Storage: 10%..90%

Temperature modification: 8°K/hour

Impact load:	3 AXIS (5 cm)
Vibration stress:	0.25 g

16.5 Printer Mechanisms

16.5.1 60mm Printer Mechanism

Print type:	Non-impact, parallel
Print method:	Thermal sensitive
Vertical dot separation	0.125 mm
Dot diameter:	0.125 mm
Print speed:	max. 800 Dot lines/sec. = 100 mm/sec. at 50% print ratio
Resolution:	8 dot/mm horizontal and vertical
Drive:	Bipolar controlled step motor to drive a friction roller.
Step distance:	0.0625 mm
Feed speed:	100 mm/sec.
Print width:	max. 56 mm at 448 dots
Paper feed width:	max. 60 mm
Paper end sensor PE:	Reflex light beam
Power supply:	
Head and step motor control:	24 VDC
Logic:	5 VDC

16.5.2 82.5mm Printer Mechanism

Print type:	Non-impact, parallel
Print method:	Thermal sensitive
Vertical dot separation	0.125 mm
Dot diameter:	0.125 mm
Print speed:	max. 800 Dot lines/sec. = 100 mm/sec. at 50% print ratio
Resolution:	8 dot/mm horizontal and vertical
Drive:	Bipolar controlled step motor to drive a friction roller.
Step distance:	0.0625 mm
Feed speed:	100 mm/sec.
Print width:	max. 80 mm at 640 dots
Paper feed width:	max. 82.5 mm
Paper end sensor PE:	Reflex light beam
Power supply:	
Head and step motor control:	24 VDC
Logic:	5 VDC

16.5.3 114mm Printer Mechanism

Print type:	Non-impact, parallel
Print method:	Thermal sensitive
Vertical dot separation	0.125 mm
Dot diameter:	0.125 mm
Print speed:	max. 800 Dot lines/sec. = 100 mm/sec. at 50% print ratio
Resolution:	8 dot/mm horizontal and vertical
Drive:	Bipolar controlled step motor to drive a friction roller.
Step distance:	0.0625 mm
Feed speed:	100 mm/sec.
Print width:	max. 104 mm at 832 dots
Paper feed width:	max. 114 mm
Paper end sensor PE:	Reflex light beam
Power supply:	
Head and step motor control:	24 VDC

Logic:	5 VDC

16.6 Controller

16.6.1 Hardware

Micro controller	H8/3003H
Code(Flash)	1-16 Mbit AMD 5 Volt Flash
RAM	128 kb x 16SRAM
Interface 1	V24 RS232
Interface 2	Centronics, parallel
Keyboard	3 keys can be connected
Display	3 LED's + 1 buzzer can be connected
Power control	Bipolar step motor and DC cutter motor
Print head temperature monitoring	A/D switcher
Print head controls	Load head, power head, measure head
Data input buffer	64 Kbytes
Power supply	24 VDC (internal 5 VDC)
I/O expansion	8 Bit

16.6.2 Software

Emulation	Graphic Device Interface

16.7 Cutter

Paper feed width	60/90/120 mm
Cutting power	max. 120g/m² paper weight
Drive	Integrated DC motor
Power supply	24 VDC

16.8 Paper Route Monitoring & Paper Dispenser

16.8.1 Paper Route Monitoring

Paper end pending sensor	Impulse/time unit can be set as a factor of the remaining paper length.
Paper weekend sensor	Impulse/time unit can be set as a factor of the remaining paper length

These signals are created through a fork-type light beam and a slotted disc which is mechanically connected to the paper dispenser roller.

Paper route sensor	Reflex light beam between print head and cutter.

16.8.2 Paper Dispenser

Roll diameter	max. 230 mm at 78g/m² paper weight
Core diameter	Light gap 50 mm
Paper weight	60 - 120 g/m²
Paper thickness	0.07 - 0.13 mm
Paper width	60 mm/2” +/- 0.5 mm 82.5 mm/3 ¼" +/- 0.5 mm 114 mm/4” +/- 0.5 mm

16.9 Power Supply

Power supply	24 V +/- 5% (U_{Nom} = 24 VDC)
Power consumption	Typically approx. 85 VA at U_{nom}
	Short term max. 240 VA Standby approx. 5 VA

With print head and connector connected -

Please note
4 AT fuse to be connected

16.10 Standards

Noise Emission acc. EN 50022, Class A

This printer is Class A device.
The device can cause radio interference in a domestic situation.
If this occurs, the user can be required to carry out appropriate counter-measures at his expense.

16.10.1 Noise Immunity acc. EN 500082-1

The following conditions must be met:

- Power supply cable must have a maximum length of 3 metres
- A power unit equipped with a power filter must be used

16.10.2 EMC Test Environment

- Built-in in a 19” ratiopac housing 6HE or 84TE from the Schroff company
- Screened data cable
- Power supply: hinged ferrite used on the cabling within the 19” housing

Würth no.: 742 710 1
Hengstler no.: 3 533 140

16.11 Emulations

PIXXO A Software manual SWH 2 688 256_565 or
PIXXO B Software manual SWH 2 688 256_xxx

16.12 Thermal Head Control

16.12.1 Thermal Head Current Time

The thermal print head temperature monitoring is carried out by a sensor in the thermal head. The current supplied is continuously controlled in relation to the thermal head temperature ensuring a consistent print and avoiding overheat.
he heat element tolerances can be compensated in three steps.

16.12.2 Head Temperature Monitoring

The maximum temperature monitoring is carried out by the controller firmware by measuring the PWM signal. If the temperature exceeds 90° C, the printer goes in error mode.
For error descriptions, please refer to the Errors and Disturbances Chapter

16.13 Paper Specification

Problem-free printer operation can be guaranteed if you use paper from the following manufacturers

Manufacturer	Paper description
Köhler	KT78 and KT78 TC
Stora	KT 7051

16.14 Dimensions

Type A/B with 60 mm paper width

Overall depth/Width/Height	See measurements sheet
Weight without paper (Type A)	5.6 kg
Weight without paper (Type b)	7.6 kg

Type A/B with 82.5 mm paper width

Overall depth/Width/Height	See measurements sheet
Weight without paper (Type A)	6.6 kg
Weight without paper (Type b)	8.6 kg

Type A/B with 114 mm paper width

Overall depth/Width/Height	See measurements sheet
Weight without paper (Type A)	7.6 kg
Weight without paper (Type b)	9.6 kg

16.15 Build-in Position

In the standard configuration, the printer must be built in horizontally.

16.16 Earthing

The printer housing must be earthed.

17 Further Documentation

PIXXO Type A Measurements sheet	0 688 800
PIXXO Type B Measurements sheet	0 688 803
Installation manual	2 688 179
PIXXO A Software manual	2 688 181_565
PIXXO B Software manual	2 688 181_586
Data protocol manual	2 688 259
System documentation	0 688 969

18 Replacement Parts & Accessories

18.1 Replacement Parts

18.1.1 Wear & Tear Parts

Description	Part number	Requirement per installed device
Paper spindle	E1 688 313(60)	1%
Print mechanism	E3 537 208(60)	0.5%
Cutter	E1 685 309(60)	0.2%
Paper spindle	E1 688 314(82.5)	1%
Print mechanism	E3 537 206(82.5)	0.5%
Cutter	E1 685 304(82.5)	0.2%
Paper spindle	E1 688 315(114)	1%
Print mechanism	E3 537 211(114)	0.5%
Cutter	E1 685 305(114)	0.2%
Controller, with bi-directional Centronics interface	E1 688 319	0.2%

18.2 Consumables

Description	Part number	Requirement per installed device
Paper	3 810 845 (60)	1
Paper	3 810 846 (82.5)	1
Paper	3 810 847 (114)	1

18.3 Accessories

Description	Part number	Requirement per installed device
Data cable	Z1 688 320	1
Power supply cable	Z1 688 253	1

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Please contact us if you would like to be put in touch with our Sales Partner in your area.

HENGSTLER GmbH
PO Box 1151
D-78550 Aldingen
Germany

Telephone: +49 (0) 7424 890
Fax: +49 (0) 74 24 89210
e-mail: info@hengstler.de